

Listing to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-38. Cancelled.

39. (Previously Presented) The tissue remover according to claim 65, wherein the energy source comprises an erbium, chromium, yttrium, scandium, gallium garnet (Er,Cr:YSGG) solid state laser.

40. (Previously Presented) The tissue remover according to claim 65, wherein the energy source comprises a CO₂ laser.

41. (Previously Presented) The tissue remover according to claim 65, wherein the aspiration cannula is formed from one or more of stainless steel and a medical grade plastic.

42. (Previously Presented) The tissue remover according to claim 65, wherein the fluid guide is adapted to generate atomized fluid particles in the interaction zone.

43. (Previously Presented) The tissue remover according to claim 65, wherein the electromagnetic energy transmitter is a fiber optic delivery system.

44. (Previously Presented) The tissue remover according to claim 54, wherein the fluid comprises water.

45. (Previously Presented) The tissue remover according to claim 65, wherein the fluid comprises an anesthetic.

46. (Previously Presented) The tissue remover according to claim 65, wherein the fluid comprises a saline solution.

47. (Previously Presented) The tissue remover according to claim 54, wherein the fluid comprises sterile fluid.

48. (Previously Presented) The tissue remover according to claim 65, wherein the fluid comprises epinephrine.

49-51. Cancelled.

52. (Previously Presented) The tissue remover according to claim 65, wherein the energy source comprises an ER:YAG laser.

53. (Previously Presented) The tissue remover according to claim 65, wherein the fluid comprises epinephrine and an anesthetic.

54. (Previously Presented) A tissue remover, comprising:

a tissue remover cannula having a cannula proximal end, a cannula distal end, and a cannula axis extending between the cannula proximal end and the cannula distal end, the tissue remover cannula having a cannula wall with an inner wall surface and being provided with a cannula lumen defined as a volume encompassed by the inner wall surface, whereby the cannula lumen is in communication with the cannula distal end; and

a fluid supply guide disposed within the tissue remover cannula, the fluid supply guide transporting fluid to a distal end of the fluid supply guide and being adapted to generate fluid in an interaction zone located in close proximity to the distal end of the fluid supply guide and beyond the cannula distal end; and

an electromagnetic energy transmitter within the tissue remover cannula, the electromagnetic energy transmitter having a transmitter proximal end, a transmitter distal end, and a transmitter axis extending between the transmitter proximal end and the transmitter distal end, the transmitter axis being (a) non-identical to, (b) non-overlapping with and (c) closer to the inner wall surface than the cannula axis, the electromagnetic energy transmitter being coupled to an energy source that is configured to output electromagnetic energy having a wavelength that is substantially absorbed by the fluid such that in use electromagnetic energy from the electromagnetic energy transmitter is substantially absorbed by a portion of the fluid in the interaction zone, the absorption of the electromagnetic energy by the portion of fluid causes the portion of fluid to expand, and disruptive cutting forces are imparted onto soft or hard tissue in close proximity with the cannula distal end.

55. (Previously Presented) The tissue remover as set forth in Claim 54, wherein the energy source comprises an Er, Cr:YSGG laser.

56. (Previously Presented) The tissue remover as set forth in Claim 54, wherein the energy source comprises an infrared laser and the imager comprises an infrared imager.

57. (Previously Presented) The tissue remover as set forth in Claim 54, wherein the imager is disposed within the tissue remover.

58. (Previously Presented) The tissue remover as set forth in Claim 54, wherein the imager is disposed within the cannula lumen.

59. (Previously Presented) The tissue remover as set forth in Claim 56, wherein the imager maps temperature differences of tissue in close proximity with the cannula distal end by detecting electromagnetic radiation from tissue that is at different temperatures from its surroundings.

60-64. Cancelled.

65. (Previously Presented) A tissue remover, comprising:

an aspiration cannula having a cannula proximal end, a cannula distal end, and a cannula axis extending between the cannula proximal end and the cannula distal end, the aspiration cannula being provided with an inner wall surface defining a cannula lumen that is in communication with the open cannula distal end;

a fluid guide disposed within the aspiration cannula and longitudinally extending within the cannula lumen, the fluid guide transporting a sterile fluid that comprises water to a distal end of the fluid guide and being adapted to generate fluid in an interaction zone located in close proximity to the distal end of the fluid guide beyond the open cannula distal end; and

an electromagnetic energy transmitter operatively mounted within the cannula lumen, the electromagnetic energy transmitter having a transmitter proximal end, a transmitter distal end, and a transmitter axis extending between the transmitter proximal end and the transmitter distal end, the transmitter axis being disposed closer to the inner wall surface than to the cannula axis, the electromagnetic energy transmitter being coupled to an energy source that is configured to output electromagnetic energy having a wavelength which is substantially absorbed by a portion of fluid in the interaction zone, the absorption of the electromagnetic energy by the portion of fluid causing the portion of fluid to expand whereby disruptive cutting forces are imparted onto soft or hard tissue in close proximity with the open cannula distal end.

66. (Previously Presented) A tissue remover, comprising:

an aspiration cannula having a cannula proximal end, a cannula distal end, and a cannula axis extending between the cannula proximal end and the cannula distal end, the aspiration cannula being provided with a cannula lumen which is disposed within an inner wall surface of the aspiration cannula and which is in communication with the open cannula distal end;

a fluid guide disposed within the aspiration cannula and longitudinally extending within the cannula lumen, the fluid guide transporting an anesthetic; to a distal end of the fluid guide and being adapted to generate fluid in an interaction zone located in close proximity to the distal end of the fluid guide beyond the open cannula distal end; and

an electromagnetic energy transmitter operatively mounted within the cannula lumen, the electromagnetic energy transmitter having a transmitter proximal end, a transmitter distal end, and a transmitter axis positioned closer to the inner wall surface than the cannula axis and extending between the transmitter proximal end and the transmitter distal end, the electromagnetic energy transmitter being coupled to an energy source that is configured to output electromagnetic energy having a wavelength which is substantially absorbed by a portion of fluid in the interaction zone, the absorption of the electromagnetic energy by the portion of fluid causing the portion of fluid to expand whereby disruptive cutting forces are imparted onto soft or hard tissue in close proximity with the open cannula distal end.

67. (Previously Presented) The tissue remover according to claim 66, wherein the sterile fluid comprises a saline solution.

68. (Previously Presented) The tissue remover according to claim 66, wherein the sterile fluid comprises epinephrine.

69. (Previously Presented) The tissue remover according to claim 47, wherein the sterile fluid further comprises an anesthetic.

70-75. Cancelled

76. (Previously Presented) The tissue remover according to claim 54, wherein the fluid supply guide is adapted to generate atomized fluid particles in the interaction zone.

77. (Previously Presented) The tissue remover according to claim 66, wherein the fluid guide is adapted to generate atomized fluid particles in the interaction zone.

78. (Previously Presented) The tissue remover as set forth in Claim 54, and further comprising:

an imager, the imager being adapted to provide an image to a user of an area in proximity to the cannula distal end; and

a source of aspiration connected to a proximal end of the tissue remover cannula, the source of aspiration being configured to aspirate fluid from the fluid supply guide, and tissue debris, through the cannula distal end and the tissue remover cannula.

79. (Previously Presented) The tissue remover according to claim 65, and further comprising a source of aspiration connected to a proximal end of the aspiration cannula, the source of aspiration being configured to aspirate fluid, and soft or hard tissue, through the open cannula distal end and the aspiration cannula.

80. (Previously Presented) The tissue remover according to claim 66, and further comprising a source of aspiration connected to a proximal end of the aspiration cannula, the source of aspiration being configured to aspirate fluid, and soft or hard tissue, through the open cannula distal end and the aspiration cannula.